

# **Digital Currency, Blockchains, and the Future of the Financial Services Industry**

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KMC 1-70, 44 West 4<sup>th</sup> Street  
Mondays & Wednesdays, 10:30 –11:50  
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## Course overview

Bloomberg in 2016 summarized a research report issued by McKinsey & Co:

*Firing people won't be enough to save the world's biggest banks from technological and regulatory changes that have reshaped the industry - whole businesses must go, according to McKinsey & Co. Almost every bank will have to quash aspirations to be all things to all customers . . . Only three to five global full-service banks will survive, McKinsey said.*

In 2020, Goldman Sachs appointed a new Head of Digital Assets, who told CNBC in an interview that:

*In the next five to 10 years, you could see a financial system where all assets and liabilities are native to a blockchain, with all transactions natively happening on-chain.*

Fidelity Digital Assets, in its [2022 Institutional Investor Digital Assets Study](#), found that:

*Nearly six-in-10 (58%) institutional investors surveyed were invested in digital assets in the first half of 2022, and 74% of investors plan to buy or invest in digital assets in the future.*

This course covers digital currencies, blockchains, and related topics in the FinTech area, perhaps the most significant innovation in the financial world since the advent of double entry bookkeeping centuries ago. The technology appears to represent an existential challenge for major parts of the finance industry. It is now commonly suggested by experts such as McKinsey that commercial banks and stock exchanges may no longer exist, or may become much smaller, within the next 10 to 20 years, with increasing volumes of payments and exchange taking place on a peer-to-peer basis.

These innovations have likewise created novel challenges to legal systems and financial services regulators globally. Their varying responses to these new assets have influenced

their use and development, exposed underlying political motivations, and caused jurisdictions to take new approaches to regulation of these technologies.

We will begin with a study of the nature of money and the legacy payment and banking systems. We will then study the emergence of stateless, cloud-based digital currency systems since 2009. Further lectures will explore threats that blockchain technology poses to incumbent firms, resulting attempts to co-opt the technology into existing business models, and the United States' legal and regulatory approach to digital assets. We will survey related topics including "smart contracts" and decentralized finance (DeFi), stablecoins, central bank digital currency, and emerging regulation.

### Learning Outcomes

The goal of this course is to equip the students to understand the law and business of blockchain technology, both in its initial application in the digital currency Bitcoin, as well as in the emergent digital assets and applications currently being explored for a wide variety of uses and functions. The course is also intended to create a bridge between law students and business students that will enhance the quality of their communications after they enter into their careers.

### Course organization

The course meets twice a week, Mondays and Wednesdays from 10:30–11:50. We will generally follow the Stern calendar, since our classroom is located there. Our first class meeting will be Wednesday September 4, and our final class meeting will be Monday December 9. We will not hold class on Monday, October 14.

Because the calendars for Stern and the Law School do not line up perfectly, Prof. Hinkes will teach a law-focused class on 11/27 (which is a holiday for Stern), and Prof. Yermack will teach a class mainly for Stern students on 12/9 (which is the first day of exams for the Law students).

All class meetings will be recorded for later viewing, with links available on the NYU Brightspace website via MediaSite (note that we do not use PanOpto, the Law School's media platform, which is similar to MediaSite in many respects).

The course will feature a number of guest speakers from industry and government.

### Office Hours:

Professor Hinkes will be available for office hours at 10:00am on the dates when he is indicated to teach, below, in Vanderbilt Hall. Additional office hours may be requested by email to [ahinkes@stern.nyu.edu](mailto:ahinkes@stern.nyu.edu)

Professor Yermack will hold office hours in his Stern office, Room 9-79 of KMC, on Monday and Wednesday afternoons after 3:00 and on many other weekdays as well. He will also meet students on Zoom by appointment requested at [dyl@stern.nyu.edu](mailto:dyl@stern.nyu.edu).

### Readings

Many readings for the course will be posted in .pdf or .ppt format on NYU Brightspace, or will be available through Internet links included in the syllabus below. The syllabus may be updated to reflect the availability of new readings or guest speakers.

We will also feature reading excerpts from two textbooks:

- Narayanan et al., *Bitcoin and Cryptocurrency Technologies* (2016). This book, a companion to Princeton University's Coursera open on-line course in digital currency, is available for purchase, but a full pre-publication draft [can be downloaded at no cost](#).
- Carnell, Macey & Miller, *The Law of Financial Institutions* (6<sup>th</sup> edition, 2017). Excerpts will be distributed to students via NYU Brightspace.

For further reading:

- Students are encouraged to stay current on the topic by following recent developments. For relevant daily breaking news, the authoritative source is the website [Coindesk](#).
- A succinct, non-technical and highly readable introduction to the field is Malekan, *The Story of the Blockchain* (2018).
- Another succinct book, written at the intermediate-level book and more focused on Ethereum and decentralized finance is Harvey, Ramachandran and Santoro, *DeFi and the Future of Finance* (2021).

### Evaluation

Evaluation will be based 90% on student papers or projects that will be due during the December exam period, and 10% on the "student participation" short writing assignments described below. Potential paper topics will be distributed early in the semester, although students are encouraged to propose their own subjects.

### Student Participation

Each student shall turn in a 1 to 2-page essay analyzing or discussing a topic that was presented in class or addressed in the readings assigned during the prior month. The essay shall identify an issue or question that remains unsolved, or inadequately explored or resolved, and explain why that issue is important or impactful. The essay should be typed in 12 point font, double-spaced, with standard margins and should include citations as necessary to the lecture, class assigned reading, and any other sources. All essays shall

be submitted (*i.e.* uploaded) by 5:00 pm Eastern time on the below dates via NYU Brightspace in .docx or .pdf format. These essays will be graded on a pass/fail basis and will account for 10% of the student grade. Untimely submitted essays will be graded as fail. Essay due dates: October 4, November 1, and November 27.

### Lecture topics

An approximate list of the course's lecture topics appears below. We may deviate from this schedule based upon factors including the pace of individual lectures, the availability of guest speakers, and events that occur in industry. Additional readings may be supplied and posted on NYU Brightspace when they become available.

Wednesday, September 4      GM/AH/DY      Introductory class

- *The Economist*, 2015, "The Great Chain of Being Sure About Things."
- Ferguson, 2020, "[Bitcoin Is Winning the COVID-19 Monetary Revolution.](#)"
- *The Economist*, 2021, special report on The Future of Banking.

Monday, September 9      GM      Payment systems

- Narayanan et al, Preface pp 3-22.
- Carnell, Macey & Miller, pp 50-56; 65-78.

Wednesday, September 11      GM      The nature of money

- Carnell, Macey & Miller, pp 19-21; 31-40; 199-204.

Monday, September 16      GM      Bank created money

- Carnell, Macey & Miller, pp 238-249; 260-267.

Wednesday, September 18,      DY      The road to Bitcoin  
Monday September 23

- Nakamoto, 2008, "[Bitcoin: A Peer-to-Peer Electronic Cash System.](#)"
- Segal, 2014, "Eagle Scout. Idealist. Drug Trafficker?"
- Narayanan, et al. Preface, pp 3-22.

Wednesday, September 25      DY      Blockchains and mining  
Monday, September 30

- Narayanan, et al. Ch. 1.
- Haber & Stornetta, 1991, “[How to Time-Stamp a Digital Document.](#)”
- Böhme, Christin, Edelman, and Moore, 2015, “[Bitcoin: Economics, Technology, and Governance.](#)”
- Huang, O’Neill, & Tabuchi, 2021, “[Bitcoin Uses More Electricity Than Many Countries. How Is That Possible?](#)”

Wednesday, October 2      DY      Ethereum basics

- John, Monnot, Mueller, Saleh, & Schwarz-Schilling, 2024, “[Economics of Ethereum.](#)”

Monday, October 7      AH      Smart contracts

- Narayanan et al., Ch. 9.
- Szabo, 1996, “[Formalizing and Securing Relationships on Public Networks.](#)”
- Chamber of Digital Commerce, 2016, “[Smart Contracts – 12 Use Cases for Business & Beyond.](#)”
- Raskin, 2017, “[The Law and Legality of Smart Contracts.](#)”
- Excerpt - Stabile, Prior & Hinkes, Digital Assets and Blockchain Technology, “Chapter 6: Smart Contracts”

Wednesday, October 9      DY      Forks, attacks, “code=law,”  
and blockchain governance

- Narayanan, et al. Ch. 5
- Leisig, 2017, “[The Ether Thief.](#)”
- Kiernan, 2023, “[Bitcoin’s Future Depends on a Handful of Mysterious Coders.](#)”

Wednesday, October 16 [AH] Digital assets and derivatives  
Guest speaker: **Juan Suarez**, Crypto Ratings Counsel

- [\*CFTC v. Bitmex\*](#), Case 1:20-cv-08132, D.E. #1, (S.D. N.Y. Oct. 1, 2020).
- [\*CFTC v. Bitmex\*](#), Case 1:20-cv-08132, D.E. #62 (S.D.N.Y. Aug. 10, 2021).
- Isaac, Riemer, Mikhael, & Humenik, 2022, “[CFTC and SEC Perspectives on Cryptocurrency and Digital Assets – Volume I: A Jurisdictional Overview](#).”
- Ciralsky, 2021, “[The Rise and Fall of Bitcoin Billionaire Arthur Hayes](#).”
- Ruan & Streltsov, 2024, “[The Emerging Market of Cryptocurrencies and Perpetual Contracts](#).”
- Clark, Leone, & Robinson, 2024, “[Everything is a Perp](#).”

Monday, October 21 DY Altcoins and tokens;  
ERC-20 ICOs and ERC-721 NFTs

- Howell, Niessner, & Yermack, 2020, “[Initial Coin Offerings: Financing Growth with Cryptocurrency Token Sales](#).”
- Chow, 2021, “[NFTs Are Shaking Up the Art World—But They Could Change So Much More](#).”
- Upson, 2021, “[The 10,000 Faces That Launched an NFT Revolution](#).”

Wednesday, October 23 AH Payments regulation and digital assets

- Stabile, Prior & Hinkes, pp 28-56, 89-125.
- [\*U.S. v. Harmon\*](#), Case 19-cr-00395, indictment.
- [\*U.S. v. Harmon\*](#), 2020, FinCen assessment of civil money penalty.
- [\*U.S. v. Storm\*](#), 2023, indictment.
- [\*U.S. v. Rodriguez\*](#), 2024, indictment.

Monday, October 28 AH Digital assets and securities regulation

- [\*SEC v. W.J. Howey Co.\*](#), 328 U.S. 293 (1946).
- SEC, 2017, “[Report of Investigation Pursuant to Section 21\(a\) of the Securities Exchange Act of 1934: TheDAO](#).”
- Hinman, 2018, “[Digital Asset Transactions: When Howey Met Gary \(Plastic\)](#).”
- SEC, 2019, “[Framework for “Investment Contract” Analysis of Digital Assets](#).”
- Garlinghouse, 2020, “[The SEC’s Attack on Crypto in the United States](#).”
- *SEC v. Ripple Labs*, Case No. 20 Civ. 10832 (S.D.N.Y., Dec. 22, 2020)
- Peirce, 2021, “[Token Safe Harbor Proposal 2.0](#).”
- Massari, 2022, “[Why Cryptoassets are not Securities](#).”

- [SEC v. Payward Ventures Inc.](#), Case 3:23-cv-00588, D.E. #1 (N.D. Cal Feb. 9, 2023).
- [SEC v. Payward Ventures Inc.](#), litigation release 25637, February 13, 2023.
- [SEC v. Coinbase Inc.](#), (Case 1:23-cv-04738) D.E. #1, (June 6, 2023)
- [SEC v. Coinbase Inc.](#), (Case 1:23-cv-04738) D.E. #105, (March 27, 2024)

Wednesday October 30      [DY]      Blockchains, NFTs, provenance,  
and the art market

*Guest speaker: Amy Whitaker, NYU Steinhardt*

- Rightclicksave, 2022, "[The Artist as Currency](#)."
- McAndrew, 2023, [Art Basel Market Report](#), pp. 16-54.
- Corbett, 2023, "[The Inheritance Case That Could Unravel an Art Dynasty](#)."
- [Mann v. SEC](#), Case 2:24-cv-01881 (E.D.La.), July 29, 2024.

*Optional:*

- Keefe, 2023, "[How Larry Gagosian Reshaped the Art World](#)."
- Miller, 2023, "[Want to Buy This Painting? First You'll Have to Audition](#)."

Monday, November 4      DY      Ethereum and proof-of-stake

- CoinMetrics, 2022, "[Mapping Out the Merge](#)."

Wednesday, November 6      [AH]      State law and banking

*Guest speaker: Caitlin Long, Custodia Bank*

- Wyoming Division of Banking, [Special Purpose Depository Institutions](#).
- 22 Wyoming Statutes Section 13-12-103, [Special Purpose Depository Institutions](#).
- Federal Reserve, 2023, [Denial of Application by Custodia Bank](#).
- *Custodia Bank v. Federal Reserve*, Case No. 1:22-CV-125-SWS, [Appellants' Opening Brief](#), June 26, 2024 (read pp 1-22 and 24-26).

Monday, November 11      DY      Decentralized finance (DeFi)

- *The Economist*, 2021, special report on Decentralized Finance.
- Wright and DeWaal, 2020, "[The Growth and Regulatory Challenges of Decentralized Finance](#)," slides for CFTC presentation
- Schär, 2021, "[On Blockchain- and Smart Contract-Based Financial Markets](#)."

- Lehar & Parlour, 2023, “[Decentralized Exchange: The Uniswap Automated Market Maker.](#)”
- John, Hasbrouck, & Saleh, 2024, “[The Evolution of Decentralized Exchange: Risks, Benefits, and Oversight.](#)”

Wednesday, November 13      DY      DeFi controversies and the emergence of Ethereum competitors

- Wahrstätter, Zhou, Qin, Svetinovic, & Gervais, 2023, “[Time to Bribe: Measuring Block Construction Markets.](#)”

Monday, November 18      GM      Stablecoins, past and present

- Carnell, Macey & Miller, pp 204-238.

Wednesday, November 20      GM      Regulation of stablecoins

- Swiss Financial Market Supervisory Authority, 2019, “[‘Stable Coin’ Guidelines.](#)”
- New York Attorney General, 2021, [Tether Settlement Agreement.](#)
- Bank for International Settlements, 2024, “[Stablecoins: Regulatory Responses to Their Promises of Stability.](#)”
- Berwick and Foldy, 2024, “[Inside the Russian Shadow Trade for Weapons Parts, Fueled by Crypto.](#)”

Monday, November 25      DY      Private and social media stablecoins

- Brunnermeier, James, & Landau, 2019, “[The Digitalization of Money.](#)”
- Tett, 2021, “[Bankers Quietly Mould Crypto Innovations for Their Own Use.](#)”

Wednesday, November 27      AH      DeFi and the law

- Qin et al, 2021, “[CeFi vs. DeFi — Comparing Centralized to Decentralized Finance.](#)”
- Crenshaw, 2021, “[Statement on DeFi Risks, Regulations, and Opportunities,](#)” U.S. Securities and Exchange Commission.
- Schär, 2022, “[DeFi’s Promise and Pitfalls,](#)” International Monetary Fund.
- Aave, “[Flash Loans.](#)”



- *In re: Barbridge DAO*, Order Instituting Cease-And Desist Proceedings File No. 3-21817, December 22, 2023.

Wednesday, December 2      AH      DAOs

- Buterin, “[DAOs, DACs, DAs and More: An Incomplete Terminology Guide.](#)”
- Jentzsch, “[Decentralized Autonomous Organization To Automate Governance.](#)”
- SEC, 2017, “[Report of Investigation Pursuant to Section 21\(a\) of the Securities Exchange Act of 1934: TheDAO.](#)”
- *CFTC v. Ooki DAO*, Case 3:22-cv-05416-WHO, D.E # 76, Order granting motion for default judgment (N.D.Cal. June 8, 2023).
- Reyes & Hurt, 2024, “[The Contractarian Joint Venture.](#)”
- Optional:
- Brummer & Serra, 2022, “[Legal Wrappers and DAOs.](#)”

Monday, December 4      DY      Financial inclusion and  
Central bank digital currency

- Dyson & Hodgson, 2016, “[Digital Cash: Why Central Banks Should Start Issuing Electronic Money.](#)”
- European Central Bank, 2020, [Report on a Digital Euro.](#)
- Raskin & Epstein, 2023, “[A Wall of Separation Between Money and State: Policy and Philosophy for the Era of Cryptocurrency.](#)”
- Venkataramakrishnan, 2023, “[How Digital Cash Got Caught Up in the Culture Wars.](#)”

Monday December 9      DY      Crypto investing

- Choi, Lehar & Stauffer, 2022, “[Bitcoin Microstructure and the Kimchi Premium.](#)”
- Li, Shin & Wang, 2023, “[Cryptocurrency Pump and Dump Schemes.](#)”
- Kowsmann, Ostroff & Wexler, 2024, “[Crypto Gets Blamed for a Real-Life Currency Crisis.](#)”